Clean version of claims, incorporating current amendments.

1. (Cancelled)

2. (New) A method of soft decision decoding, the method comprising the steps of:
   a. receiving an input signal over a channel; and
   b. approximating a Log-Likelihood-Ratio result of the input signal, wherein the Log-Likelihood-Ratio result is independent of a signal to noise ratio value calculable over the channel.

3. (New) The method of soft decision decoding according to claim 2 wherein the step of approximating further comprises calculating an actual Log-Likelihood-Ratio value for each of a plurality of m bits per symbol contained in the input signal.

4. (New) The method of soft decision decoding according to claim 3 wherein the step of approximating further comprises separating the actual Log-Likelihood-Ratio values into one or more n-regions, wherein n is an integer.

5. (New) The method of soft decision decoding according to claim 4 wherein the step of approximating further comprises determining a constant, $a_n$, by computing a partial derivative for the actual Log-Likelihood-Ratio values in the one or more n-regions.

6. (New) The method of soft decision decoding according to claim 5 wherein the step of approximating further comprises determining a slope for the actual Log-Likelihood-Ratio value for each of the plurality of m bits per symbol.

7. (New) The method of soft decision decoding according to claim 6 wherein the slope is determined by use of a linear equation, wherein the linear equation utilizes the constant $a_n$.

8. (New) The method of soft decision decoding according to claim 6 wherein the step of approximating further comprises quantizing the slope for each m bit per symbol.

9. (New) The method of soft decision decoding according to claim 8 wherein the step of quantizing is performed using a quantizing equation

$$Quantize = \left( LLR \frac{2^{SOFT\_BITS-1}}{qLIMIT} + 2^{SOFT\_BITS-1} \right)$$

wherein the SOFT_BITS value and the qLIMIT value are dependent on the signal to noise ratio.

10. (New) A method of soft decision decoding over a channel, the method comprising the steps of:

a. receiving an input signal over the channel, wherein the input signal has a plurality of m bits per symbol;

b. calculating an actual Log-Likelihood-Ratio value for each of the plurality of m bits per symbol;

c. determining a slope for the actual Log-Likelihood-Ratio value of each m bit; and

d. quantizing the slope for each m bit per symbol and generating a Log-Likelihood-Ratio result, wherein the Log-Likelihood-Ratio value is independent of noise over the channel.

11. (New) The method of soft decision decoding according to claim 10 further comprising separating the actual Log-Likelihood-Ratio values into one or more n-regions, wherein n is an integer.

12. (New) The method of soft decision decoding according to claim 11 further comprising determining a constant $a_n$ by computing a partial derivative for the actual Log-Likelihood-Ratio values in the one or more n-regions.

13. (New) The method of soft decision decoding according to claim 12 wherein the slope is determined by use of a linear equation, wherein the linear equation utilizes the constant $a_n$.

14. (New) The method of soft decision decoding according to claim 10 wherein the step of quantizing is performed using a quantizing equation

$$Quantize = \left( LLR \frac{2^{SOFT\_BITS-1}}{qLIMIT} + 2^{SOFT\_BITS-1} \right)$$

wherein the SOFT_BITS value and the qLIMIT value are dependent on the signal to noise ratio.

15. (New) A method of soft decision decoding over a modulated channel wherein a signal to noise ratio may be calculated over the channel, the method comprising the steps of:

a. receiving an input signal over the channel, wherein the input signal has a plurality of m bits per symbol;

b. calculating an actual Log-Likelihood-Ratio value for each of the plurality of m bits per symbol, wherein the actual Log-Likelihood-Ratio value includes a SOFT_BITS value for each of the plurality of m bits per symbol;

c. separating the actual Log-Likelihood-Ratio values into one or more n-regions, wherein n is an integer;

d. determining a constant, $a_n$ by computing a partial derivative for the actual Log-Likelihood-Ratio values in the one or more n-regions;

e. calculating a slope by use of a linear equation, wherein the linear equation utilizes the constant $a_n$; and

f. quantizing the constant $a_n$ by utilizing the quantizing equation

$$Quantize = \left( LLR \frac{2^{SOFT\_BITS-1}}{qLIMIT} + 2^{SOFT\_BITS-1} \right)$$

wherein the SOFT_BITS value and qLIMIT are dependent on the signal to noise ratio, the quantizing equation generating a quantized Logarithmic-Likelihood-Ratio result substantially independent of the signal to noise ratio over the channel.

16. (New) A Logarithmic Likelihood Ratio module for soft decision decoding over a modulated channel, the Logarithmic Likelihood Ratio module comprising:
    a. an input module for receiving a plurality of (I,Q) data symbols;
    b. a modulation unit for determining a modulation scheme for calculating a Logarithmic Likelihood Ratio result for the plurality of (I,Q) data symbols, wherein the Logarithmic Likelihood Ratio result is substantially independent of a signal to noise ratio over the modulated signal; and
    c. a converter module for converting the Logarithmic Likelihood Ratio result of the plurality of (I,Q) data symbols into unsigned values.

17. (New) The Logarithmic Likelihood Ratio module according to claim 16 further comprising a gain module for amplifying the plurality of data symbols by a multiplicative factor.

18. (New) The Logarithmic Likelihood Ratio module according to claim 16 further comprising a PSK module for calculating the Logarithmic Likelihood Ratio result by determining a slope of the plurality of (I,Q) data symbols in a phase shift key modulation scheme.

19. (New) The Logarithmic Likelihood Ratio module according to claim 16 further comprising a QAM module for calculating the Logarithmic Likelihood Ratio result by a determining a slope of the plurality of (I,Q) data symbols over a quadrature amplitude modulation scheme.

20. (New) The Logarithmic Likelihood Ratio module according to claim 19 further comprising a second QAM module for calculating the Logarthimic Likelihood Ratio result for a portion of the m bits in parallel with the QAM module.

21. (New) The Logarithmic Likelihood Ratio module according to claim 16 further comprising a multiplexer coupled to the modulation unit, wherein multiplexer provides the Logarithmic Likelihood Ratio result to the converter module.